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Science, Innovation and Electronic Information Division

The Business of Nurturing Businesses

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Note of appreciation

Canada owes the success of its statistical system to a long standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.

User information

Symbols

The following standard symbols are used in Statistics Canada publications:

.	not available for any reference period
..	not available for a specific reference period
...	not applicable
0	true zero or a value rounded to zero
0^s	value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
p	preliminary
r	revised
x	suppressed to meet the confidentiality requirements of the *Statistics Act*
E	use with caution
F	too unreliable to be published

The science and innovation information program

The purpose of this program is to develop useful indicators of science and technology activity in Canada based on a framework that ties them together into a coherent picture. To achieve the purpose, statistical indicators are being developed in five key entities:

- **Actors**: are persons and institutions engaged in S&T activities. Measures include distinguishing R&D performers, identifying universities that license their technologies, and determining the field of study of graduates.
- **Activities**: include the creation, transmission or use of S&T knowledge including research and development, innovation, and use of technologies.
- **Linkages**: are the means by which S&T knowledge is transferred among actors. Measures include the flow of graduates to industries, the licensing of a university's technology to a company, co-authorship of scientific papers, the source of ideas for innovation in industry.
- **Outcomes**: are the medium-term consequences of activities. An outcome of an innovation in a firm may be more highly skilled jobs. An outcome of a firm adopting a new technology may be a greater market share for that firm.
- **Impacts**: are the longer-term consequences of activities, linkages and outcomes. Wireless telephony is the result of many activities, linkages and outcomes. It has wide-ranging economic and social impacts such as increased connectedness.

The development of these indicators and their further elaboration is being done at Statistics Canada, in collaboration with other government departments and agencies, and a network of contractors.

Prior to the start of this work, the ongoing measurements of S&T activities were limited to the investment of money and human resources in research and development (R&D). For governments, there were also measures of related scientific activity (RSA) such as surveys and routine testing. These measures presented a limited picture of science and technology in Canada. More measures were needed to improve the picture.

Innovation makes firms competitive and we are continuing with our efforts to understand the characteristics of innovative and non-innovative firms, especially in the service sector that dominates the Canadian Economy. The capacity to innovate resides in people and measures are being developed of the characteristics of people in those industries that lead science and technology activity. In these same industries, measures are being made of the creation and the loss of jobs as part of understanding the impact of technological change.

The federal government is a principal player in science and technology in which it invests over five billion dollars each year. In the past, it has been possible to say only *how much* the federal government spends and *where* it spends it. Our report Federal Scientific Activities, 1998 (Cat. No. 88-204) first published socio-economic objectives indicators to show *what* the S&T money is spent on. As well as offering a basis for a public debate on the priorities of government spending, all of this information has been used to provide a context for performance reports of individual departments and agencies.

As of April 1999, the Program has been established as a part of Statistics Canada's Science, Innovation and Electronic Information Division.

The final version of the framework that guides the future elaboration of indicators was published in December, 1998 (Science and Technology Activities and Impacts: A Framework for a Statistical Information

System, Cat. No. 88-522). The framework has given rise to A Five-Year Strategic Plan for the Development of an Information System for Science and Technology (Cat. No. 88-523).

It is now possible to report on the Canadian system on science and technology and show the role of the federal government in that system.

Our working papers and research papers are available at no cost on the Statistics Canada Internet site at *http://www.statcan.ca/cgi-bin/downpub/research.cgi?subject=193*.

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The Business of Nurturing Businesses

by Daood Hamdani, Michael Bordt and Rad Joseph

1 Introduction

Business incubation activity is significantly more common in the economy than business incubators alone would suggest. Many business organizations offer incubation services to start-up companies because incubators are not able to satisfy the entire demand due to limited capacity. While help in securing financial assistance is important for new companies, the data show that more start-up ventures seek help with management-related issues.

Business incubation service providers offer clients space and services not easily obtainable from elsewhere because large business support organizations and consultancies usually do not cater to start-up and small companies. Business incubation service providers bridge this gap and thereby help improve the survival rates of new businesses, facilitate transfer of technology from institutions to the market and increase the commercialization potential of existing technologies by extending their applications to new areas.

This paper is based on the findings of the Survey of Technology and Electronic Commerce (SECT), which in 2005 included a module on business incubation service providers and users. The results of the Survey of Business Incubators (SBI) were discussed in Joseph, Bordt and Hamdani (2006). The main difference between the two surveys is that the SBI focused on business incubators (BIs), firms that provided business incubation as their main line of activity – the criterion used to define industry boundaries in statistical systems – whereas the SECT covered all firms that provided business incubation services to new companies, whether it was their main activity or a small part of the business (BISPs). See Box 1 for more detail.

Business incubation activity has two sides. It is useful to know how many organizations are involved in the business of helping and nurturing start-up and promising firms. Just as important for business strategy and public policy is the information on the extent to which these services are utilized and what type of services are most in demand. The next section of the paper deals with incubation service providers. Incubation service users are discussed in Section 3.

2 Business incubation service providers

The broader view of business incubation services provided by the SECT shows that the scale of business incubation activity is much larger than the activity of business incubators alone. Business incubation activity occurs outside the business incubators (BIs) for two main reasons. New start-up firms may seek services directly from consultancies and other firms if they require a limited number of services. Secondly, some new firms may not be able to get admission to an incubator because of capacity constraints and turn to other organizations to obtain similar services. A business can be refused entry for not satisfying admission requirements, but limited capacity can also be a factor. This is particularly the case with BIs that are subsidized by public agencies and charge below-market rents and service fees. The magnitude of excess demand for incubator space and services is not known, but the SBI provided an indication of the gap between the number of applicants and companies actually admitted. Only one in three applicants was successful in 2005 (Joseph and Hamdani, 2006).

According to the SECT, there were just over 33,000 BISPs (Chart 1). This figure includes business incubators as well as other businesses providing incubation services. BISPs include, for example, businesses which have a division

specifically set up to provide business incubation services or have a business development unit to support new start-ups which are owned or controlled by the corporation.

This figure is substantially higher than the 83 BIs identified as respondents to SBI. The main reason accounting for the difference was mentioned above. More details and explanations of conceptual and statistical differences are provided in Box 2.

BI and BISP

BI (business incubator) is the unit of measurement used in the Survey of Business Incubators. As a business organization, it has a specific meaning. Although the concept is evolving, a defining characteristic of a business incubator is that it provides office space to start-up companies (incubates) as well as business services to help companies survive and grow in their early years. For the specific definition, see Joseph, Bordt and Hamdani (2006). Hamdani (2006) provides a detailed discussion of the concept.

BISP (business incubation service provider) is the unit of measurement used to compile data from the Survey of Electronic Commerce and Technology (SECT). It includes all firms that provided any business incubation service, i.e. service that "helps new businesses get started and grow", regardless of whether it was its principal activity or a small part of the business. The data presented in this paper pertain to BISP unless otherwise stated.

2.1 Size distribution of business incubation service providers (BISPs)

BISPs are typically small organizations. Two-thirds of those providing business incubation services during 2002-2005 had fewer than 10 employees, with another 15 per cent employing between 10 and 19 employees. The actual number of small BISPs is likely higher, as firms earning under $100,000 in gross business income in most of the industries and under $250,000 in certain industries do not qualify for inclusion in the sample selection strategy of the SECT. The frequency distribution of BISPs with respect to size, measured by the number of employees, is similar to all business organizations operating in the economy in that period.

2.2 Services provided to new businesses

A business incubator (BI) usually provides a range of services, with the actual services offered depending on its business model (Hamdani, 2006). A detailed list of services is available in the survey instrument used for SBI (Statistics Canada, 2005a). A BISP, on the other hand, may only offer one or two services. Respondents to the SECT were asked to identify one or more of the seven broad categories of services (Statistics Canada, 2005b).

Management guidance is the most common service offered by BISPs (Chart 1). Well over one-half of business incubation service providers or 19,177 were engaged in these activities. This category covers an array of services, ranging from business support to issues of governance such as recruiting or lending executives and management team and providing an advisory board.

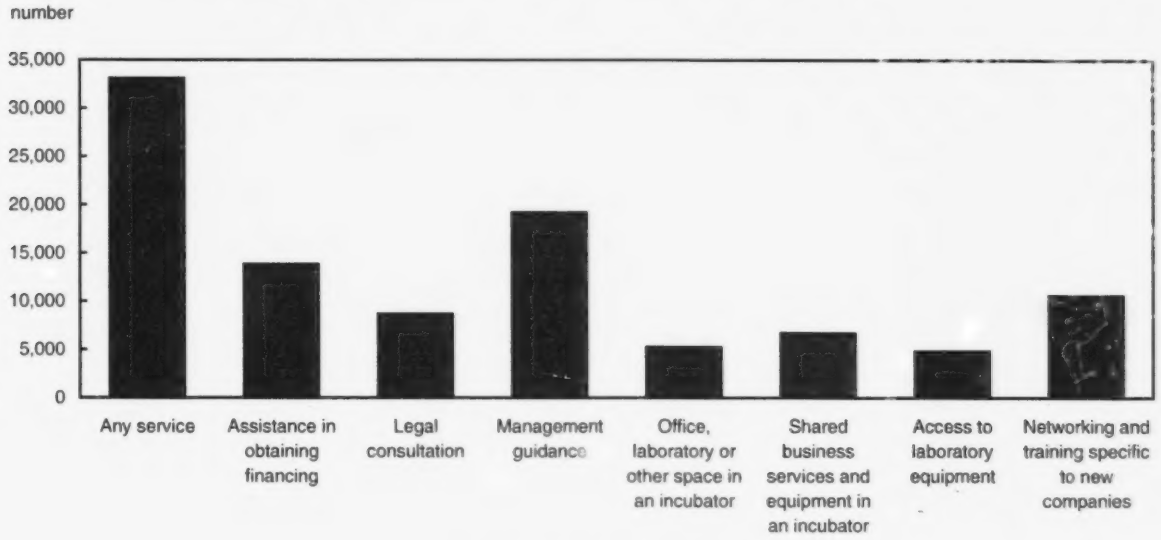
One of the main roles of business incubation is to fill gaps left by market failure and help the growth of new and fledgling companies at a stage when they have little to offer by way of collateral, their creditworthiness is not yet established, and they are generating very little revenue. Therefore, it is not surprising that assistance in obtaining financing ranks second among the seven activities. A total of 13,812 firms reported offering this service. The managed approach to enterprise creation in itself increases the creditworthiness of a new business as a business managed by experienced professionals is less likely to default on a loan or close down than one run by new, inexperienced managers.

Networking and entrepreneurial training is the third most common service on offer. Some 10,573 BISPs provided these services. Networking enables connections that help form strategic partnerships, recruit talented people and obtain advice from outside experts. It may be formalized in some organizations through agreements with other companies, while in others it may depend on the personal connections of individuals in charge. In either case, it facilitates the flow of knowledge and talent across companies and institutions and formation of marketing and technology relationships between them. Training refers to training specific to new companies aimed at developing

entrepreneurial skills. It also covers advice on forming and incorporating a company, and on various sources of relevant information and guidance.

A much smaller number of businesses offer facilities and on-site support services. Only one in six business incubation service providers (5,250) offered space for office or laboratory and one in five offered on-site business support services and equipment, while 4,806 organizations provided access to laboratory equipment.

Chart 1
Business service providers (private and public), by type of service, 2005

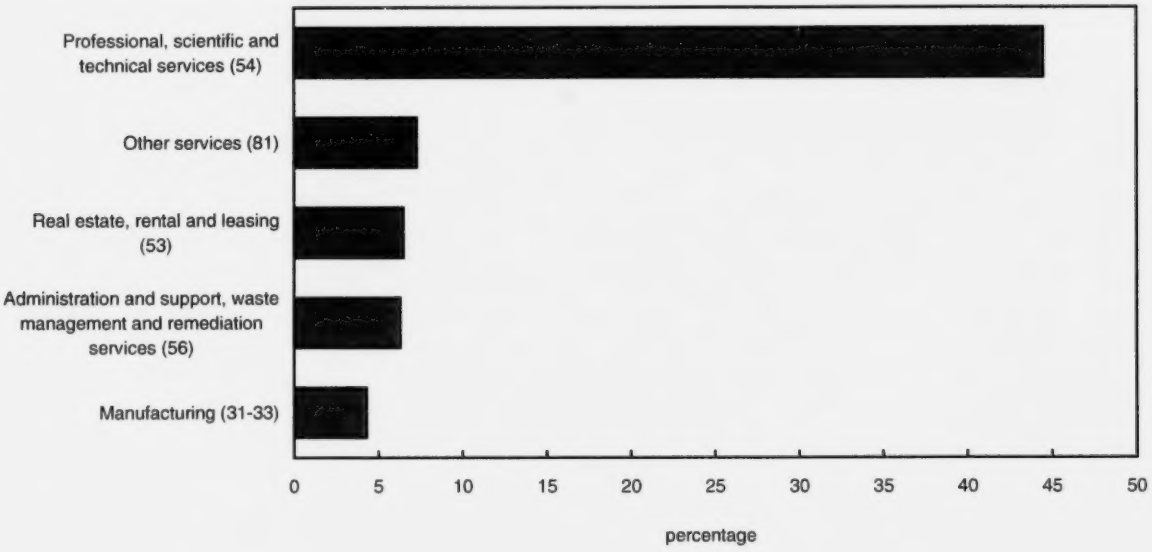


2.3 Industrial distribution of business incubation service providers

The industrial distribution pattern of incubation service providers reflects the specific needs of new businesses. In the initial phase, when start-up firms have limited resources their main concern is to leverage them. They do this in a number of ways. For example, extending the economic life of an existing asset reduces or postpones the need for new investments. Acquiring inputs using just-in-time-inventory method is another way of doing it i.e. services are acquired only for the period over which they are needed and machinery and equipment are rented or leased rather than purchased.

Business incubation service providers are concentrated in a few sectors of the economy (for more detail, see Table 1). More than two-thirds (69 per cent) of all firms providing incubation services to new firms are located in five industry sectors. Professional, scientific and technical service industry dominates with nearly 45 per cent (Chart 2). Both of the two top services in demand by new businesses – management guidance and legal consultation – as discussed later -- are provided by firms in this group of industries. Also included here are firms providing accounting, marketing and advertising services.

Chart 2
Industrial concentration of incubation service providers, top five industries, 2005



All other industries account for smaller numbers of business incubation service providers. Notable among these are businesses that serve as a bridge, providing low cost alternatives to purchasing capital assets during a period of transition. These include industries doing repair and maintenance for vehicles and certain types of electronic and commercial equipment and machinery. These are shown under 'other services', which accounted for 7.3 per cent of all incubation service providers. Also performing a bridging function is the rental and leasing services industry with a share of 6.5 per cent. Trying to manage limited resources in the initial phases of the business, new companies are reluctant to commit resources to a new asset that it might not need all year round or that may become obsolete quickly.

3 New businesses using incubation services

In 2005, more than 71,700 new firms are estimated to have made use of one or more incubation services. The actual number is likely higher. As noted earlier, incubation service users are usually new start-up and fledgling firms, which are trying to get started. Some of them may have very little revenue and no paid employees in the beginning and therefore would not have qualified to be in the target population for sample selection. For this reason, the impact of sampling strategy is higher on users than providers of incubation services. The threshold levels, as noted above, were a gross business income of $100,000 or more in most of the industries and $250,000 or more in some industries in the private sector.

It is relevant to note that a business incubation service provider (BISP) may serve only a few new businesses at a time but a business incubator (BI) serves more companies. The latter has to have a sufficiently large number of clients to make a critical mass that will allow it to realize economies of scale. In addition to serving tenants who are in residence in the incubator, a BI also provides after-care services to its graduates who are already established but may seek advice from time to time. It may also participate in outreach programs to help start-up companies in the community in which it operates as a goodwill gesture.

3.1 Services utilized by new businesses

While some needs are generic and common to most of the companies, others are more specific to the nature of business activity. For example, all or most new firms require legal services in order to incorporate and meet other regulatory requirements, but only some may need laboratory facilities. The specific needs have evolved over time as new business incubation models have emerged. For instance, a high technology company is more in need of assistance to get new products to the market quickly and ahead of competitors, whereas a company oriented towards community development may be more interested in help with planning and management.

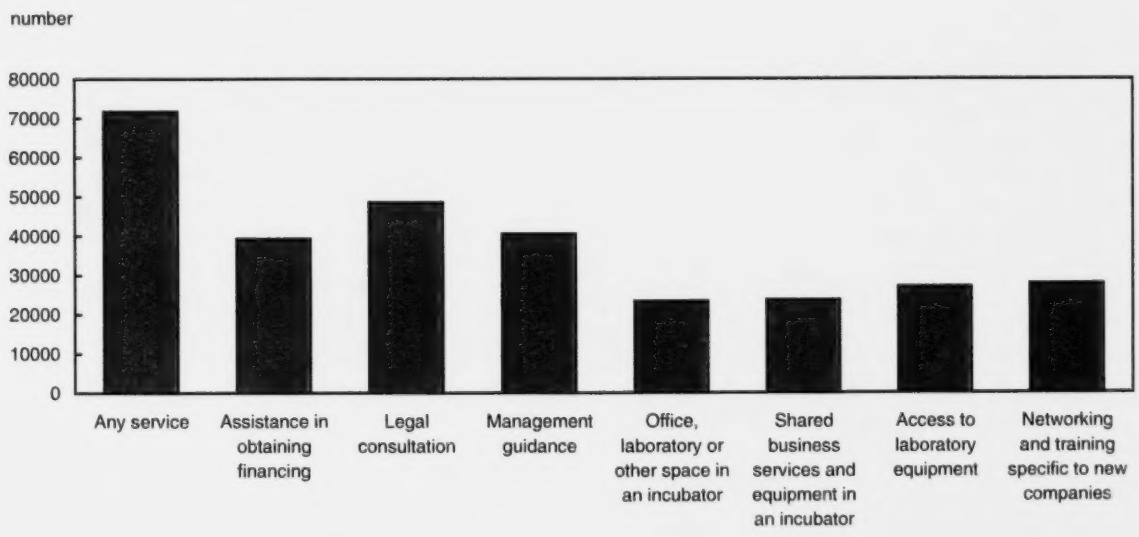
As expected, most of the new firms utilized services related to legal and regulatory requirements including general legal counseling, compliance with regulatory standards, intellectual property management, incorporation of the business, etc. Two in three incubation service users or 48,567 firms reported utilizing legal assistance.

It is noteworthy that while assistance in accessing financial resources is very important management-related issues emerge as the main concern of new ventures in the early phases of the businesses. More firms sought help in managing the business, including recruiting or borrowing managers and advisory boards, as compared with firms using assistance with financial resources (Chart 3). Some 40,500 new businesses sought help with management-related matters.

Assistance in obtaining financing whether it was seed capital or venture capital followed closely behind. It may be argued that fewer new companies needed assistance in obtaining financing because of the favourable money and equity markets but observers with experience in running incubators point out that without management guidance inexperienced managers might not make optimal use of the funds.

Other services that were much in demand included networking and training and access to laboratory equipment, while shared business services and on-site accommodation ranked the last. The relatively small number of companies taking advantage of on-site office space and shared business services does not necessarily imply low demand; on the contrary, it could mean limited supply of these services and facilities.

Chart 3
Service users (private and public), by type of service, 2005



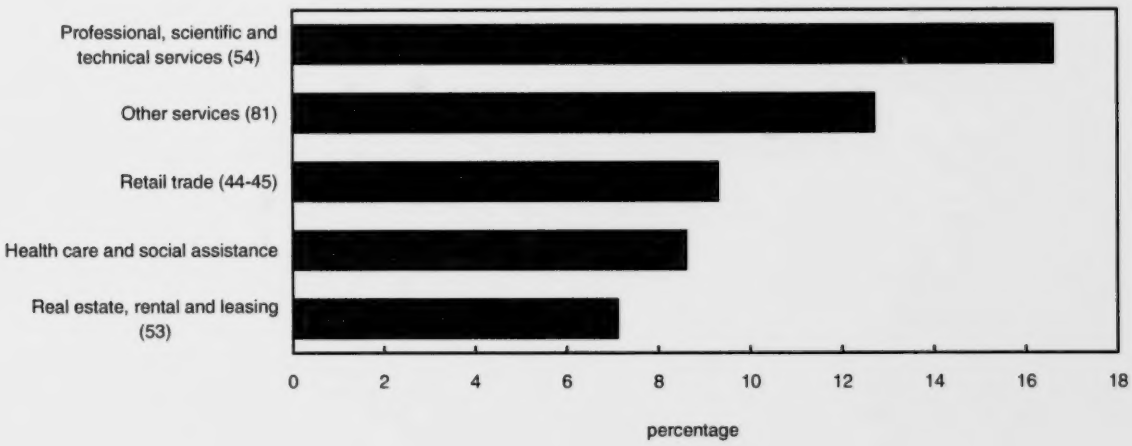
3.2 Industrial distribution of business incubation service users

While businesses providing incubation services to new firms tend to be concentrated in a few industries, incubation service users are spread across many industries. This suggests that the benefits of successful business formation as a result of incubation are likely distributed throughout the economy.

Just over one-half (54%) of incubation services users, as compared with 69% of providers were located in the top five industries. The largest number of new businesses utilizing incubation services is in industries that are intensive in human capital and require relatively small amounts of physical and financial capital. As shown in Chart 4, nearly 12,000 firms (or 16.6%) are in the professional, scientific and technical service industries, which include a wide range of industries offering engineering, architectural and industrial design services as well as legal, accounting, marketing and advertising services.

Another 12.7% were in other industries, a group which includes all firms that are not classified to any specific main industrial group. Personal and laundry services, repair, and household services, including furniture and footwear repair, as well as repair services to some industrial and commercial equipment are include here.

Chart 4
Industrial concentration of incubation service users, top five industries, 2005



Other industries that avail themselves of incubation services include retail trade and health care and social assistance, and real estate and rental and leasing industries. Health care and social assistance covers a range of organizations from the very large, such as hospitals, to very small ones including child day-care, and youth and elderly services.

4 Impact of business incubation activity

Business incubation activity affects the economy in several ways. The appropriate performance metric depends on the stated objectives. Initially, business incubators were a tool of urban renewal and community development policy. Later, the focus shifted to technology transfer and commercialization of innovation (Hamdani, 2006). Whatever the objective, the first impact of business incubation activity appears on business formation. Measuring change in business survival rates as a result of incubation activity requires longitudinal data on the performance of business incubation service users. However, some indication of the likely impact can be provided. The number of businesses making use of incubation services is sizeable. Close to 72,000 new firms reported using these services during the three-year period, 2002-2005. To place this number in a context, it comprises 11% of the target population of companies for the SECT.

5 Conclusion

The findings of SECT provide useful information to build upon the earlier work on the Survey of Business Incubators for future surveys. The analysis helped identify new organizational forms used by some business incubation service providers (BISPs). Further evaluation of these organizations will provide useful input to the current debate in the literature on what business forms are or should be covered under business incubation. The three forms as noted in the paper are divisions of companies dedicated to providing business incubation services to new businesses; business development units of companies which identify new and promising new ventures and nurture them; and finally, what are known as 'internal start-ups' All the three types of organizations share some characteristics with incubators (BIs). For example, 'internal start-ups' are carefully selected, are monitored for progress, must meet pre-set performance criteria and are subject to exit rules just like the residents of a BI.

The impact of business incubation activity remains to be studied. This paper only touched upon the leading indicators of business survival rates. Estimates of the survival rates of business incubation service users can be pursued by tracking their movements over time in the longitudinal databases such as the LEAP (Longitudinal Employment Analysis Program).

While this paper mined a good deal of data from the SECT, other possibilities for research on the impact of business incubation activity remain. Using the SECT, some light can be shed on the role of business incubation in increasing sales over the Internet. Similarly, differences in the perceptions of business incubation service users versus non-users about the benefits of conducting business over the Internet can be studied.

Other impacts noted in the introduction including technology transfer and commercialization need to be explored, by mining data from the surveys of IP and innovation and supplementing it by adding modules to these surveys instruments, keeping in mind the response burden.

Finally, given that there are several business models of business incubation and the objectives pursued by them are different such as employment creation and retaining businesses in the regions, encouraging entrepreneurship among certain communities, impacts should be related to the objectives in order to evaluate their success in achieving their goals.

Conceptual differences between the two surveys, SBI and SECT relate to the types of organizations covered.

The SECT provided a definition and let the respondents rule themselves in or out of scope. To qualify a firm did not have to be a standard incubator, but it had to provide incubation services to new businesses. This criterion covers several types of organizations in addition to standard incubators (BIs) , including businesses that have:

- operating units of a corporation with the characteristics of an incubatee. Known as 'internal start-ups', these quasi-independent units within a corporation have easy access to decision makers at a high level. Often found in fast-paced industries where product and technology life cycles are short, they represent an attempt by large corporations to make some of their critical internal operations to match the nimbleness and entrepreneurial drive that often characterizes independent start-ups. They share some common characteristics with the resident of business incubators. They have to meet pre-set criteria within a defined period of time, failing which they are either cease to exist or lose their special status. These units may be spun off later as separate business entities;

- units or divisions with the characteristics of an incubator. They may be the business development units of a corporation set up to support and nurture new start-ups that have a promising idea or a technology and want to pursue it. These start-ups usually develop products or technologies that extend applications of the parent's proprietary technologies;

- a division or unit specifically for the purpose of providing business incubation services, but are not regarded as incubators because business incubation is not their main line of activity.

The statistical differences arise from the following:

- The SECT is an economy-side survey with the exception of a few sectors, and the question dealing with incubation service providers largely leaves it to the respondent to define itself in or out of scope. The SBI questionnaire was only sent to businesses that were thought to be business incubators after an initial screening through interviews;

- Some duplication is possible because of the practice of contractual arrangements between standard incubators and specialized service providers. Generally, business incubators provide basic services but more specialized services are outsourced. Some of these outsourcing suppliers may have identified themselves as incubation service providers;

- The longer reference period (three years) used in the SECT was prone to qualify more firms than the SBI, which limited the period to one year;

- The target population of SECT covers business organization that have more than $100,000 in gross business income in most of the industries and over $250,000 in certain other industries; the threshold points for the public sector are set in terms of the number of employees.

A complete statistical reconciliation between the two sources requires more detail than is available but a substantial portion of the discrepancy can be explained. Applying the test that an incubator must provide space reduces the number of business incubation service providers dramatically, to 5,250. The actual number is probably smaller because the relationship between an incubation service provider and the user must be much more than that of a landlord and a tenant.

Appendix A — NAICS Industries

Text table 1
Industrial distribution of business incubation service providers and users, 2005

	Industry code and sector	Business incubation service providers		Business incubation service users	
		number of firms	percentage of total firms	number of firms	percentage of total firms
Agriculture, forestry, fishing and hunting	11	189	0.57	338	0.47
Mining and oil and gas extraction	21	183	0.55	308	0.43
Utilities	22	31	0.09	156	0.22
Construction	23	1.147	3.47	4.154	5.79
Manufacturing	31-33	1.413	4.27	4.312	6.01
Wholesale trade	41	1.395	4.21	4.225	5.89
Retail trade	44-45	1.16	3.5	6.71	9.36
Transportation and warehousing	48-49	1.158	3.53	4.066	5.67
Information and culture industries	51	359	1.08	929	1.3
Finance and insurance	52	1.136	3.43	2.415	3.37
Real estate and rental and leasing	53	2.164	6.54	5.083	7.09
Professional, scientific and technical services	54	14.737	44.51	11.916	16.62
Management of companies and enterprises	55	839	2.53	619	0.86
Administration and support, waste management and remediation services	56	2.107	6.37	3.227	4.5
Educational services	61	698	2.07	1.409	1.96
Health care and social assistance	62	1.2	3.63	6.146	8.57
Arts, entertainment and recreation	71	420	1.27	2.719	3.79
Accommodation and food services	72	302	0.91	3.859	5.38
Other services (except public administration	81	2.435	7.36	9.101	12.69
Public administration	91	31	0.09	16	0.02
Total		33.099	100	71.708	100

Source(s): Statistics Canada, Survey of Electronic Commerce and Technology, 2005.

Appendix B — Bibliography

Hamdani, Daood. 2006. *Conceptualizing and measuring business incubation*, SIEID working paper series, Statistics Canada Catalogue no. 88F0006XIE – no. 006, Ottawa, Canada.

Joseph, Rad., Michael Bordt and Daood Hamdani. 2006. *Characteristics of business incubators in Canada*, SIEID working paper series, Statistics Canada Catalogue no. 88F0006XIE – no. 007, Ottawa, Canada.

Joseph, Rad and Daood Hamdani, 2006. Business incubation in Canada: preliminary indicators, *Innovation Analysis Bulletin*, 8, 2, Statistics Canada Catalogue no. 88-003-XIE, Ottawa, Canada.

Statistics Canada. 2005a. *Survey of Business Incubators, 2005 – Survey Questionnaire*, 5-5300-535-1: 2005-07-04, STC/SAT – 465-75397.

Statistics Canada, 2005b. *Survey of Electronic Commerce and Technology*, 2005 – Survey Questionnaire, 5-4600-501.1: 2005-09-30, STC/SAT - 430-75167.

Appendix C — Catalogued publications

Science, Technology and Innovation statistical publications

88-001-XIE	*Science statistics*
88-003-XIE	*Innovation analysis bulletin*
88-202-XIE	*Industrial research and development, intentions (with 2004 preliminary estimates and 2003 actual expenditures) (annual)*
88-204-XIE	*Federal scientific activities (annual)*
88F0006XIE	*Science, Innovation and Electronic Information Division working papers*
88F0017MIE	*Science, Innovation and Electronic Information Division research papers*

88-001-X Volume 31 – 2007

No. 1 Research and development (R&D) personnel in Canada, 1995 to 2004 (January)
No. 2 Estimates of total spending on research and development (R&D) in the health field in Canada, 1989 to 2006 (March)
No. 3 Biotechnology scientific activities in federal government departments and agencies, 2004/2005
No. 4 Estimation of research and development expenditures in the higher education sector, 2005/2006 (August)
No. 5 Scientific and Technological (S&T) activities of Provincial Governments and Provincial Research Organizations, 2001/2002 to 2005/2006 (October)
No. 6 Total intramural research and development expenditures (November)
No. 7 Federal government expenditures on scientific activities, 2007/2008 (intentions) (December)
No. 8 Gross domestic expenditure on research and development, 2007 intentions (December)

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No. 1 Distribution of federal expenditures on science and technology, by province and territories, 2003/2004 (February)
No. 2 Biotechnology scientific activities in federal government departments and agencies, 2004/2005 (March)
No. 3 Estimates of total spending on research and development in the health field in Canada, 1988 to 2005 (May)
No. 4 Industrial Research and Development, 2002 to 2006 (August)
No. 5 Estimation of research and development expenditures in the higher education sector, 2004/2005 (August)
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